CLAIMS

1. An integrated circuit configured to provide a microphone output signal, comprising:

- a preamplifier coupled to receive an input signal, generated by a first microphone member that is movable relative to a second microphone member; and
- a voltage pump to provide a bias voltage to either microphone member.

2. An integrated circuit according to claim 1, where the integrated circuit is configured with an oscillator driven voltage pump to provide a bias voltage to either microphone member; and where the oscillator is configured to draw substantially equal levels of current across signal cycles provided by the oscillator.

3. An integrated circuit according to claim 1 or 2, where the oscillator comprises paths with elements that can be charged with an electrical charge and where the paths are controlled by the oscillator to charge the different elements of the different paths alternately by a current drawn from a common source.

4. An integrated circuit according to any of claims 1 to 3, where the voltage pump has a first pump stage at which an oscillating signal with a voltage pulse level is pumped to a higher voltage pulse level, and a second pump stage at which a voltage level is pumped to a higher level by means of a circuit operating on the oscillator signal, provided at the first stage, with the higher voltage pulse level.

5. An integrated circuit according to any of claims 1 to 4, where the integrated circuit comprises

a first portion configured with a circuit component layout for electrical operation at or below a nominal voltage level and
a second portion configured with a circuit component layout for electrical operation above the nominal voltage.

6. An integrated circuit according to any of claims 1 to 5, where an output signal of the first voltage pump stage is provided as a feedback signal to a circuit which maintains a fixed voltage pulse level of the signals output from the first pump stage (P1'; P2').

7. An integrated circuit according to any of claims 1 to 6,
where the voltage pump has a first pump stage providing an intermediate bias voltage and a second pump stage providing the bias voltage from the intermediate bias voltage; and
where the second pump stage comprises a voltage pump configured as a Dickson converter.

8. An integrated circuit according to any of claims 1 to 7, where an output signal of the voltage converter of the Dickson type is provided as a feedback signal to a circuit which provides a regulated voltage pulse level of the signals output from the voltage converter.

9. An integrated circuit according to any of claims 1 to 8, where multiple voltage converters are cascaded to provide the bias voltage, and
where a further voltage converter, which matches the first converter in the cascade, is coupled to receive the same signal as the first converter and to provide a feedback signal to a circuit which maintains a fixed voltage level of the signals output from the further voltage converter.

10. An integrated circuit according to any of claims 1 to 9, where the voltage pump comprises capacitors implemented as Metal capacitors.

11. An integrated circuit according to any of claims 1 to 10, where the voltage pump comprises diodes implemented as Poly-diodes.

12. An integrated circuit according to any of claims 1 to 11, where the voltage pump comprises diodes implemented as diffusion diodes in an N-well.

13. An integrated circuit according to any of claims 1 to 12, where the preamplifier, comprises
a differential input stage with a first and a second input terminal and an output stage with an output terminal;
a feedback circuit, with a low-pass frequency transfer function, coupled between the output terminal and the first input terminal and integrated on the semiconductor substrate; and
where the second input terminal provides an input for a microphone signal.

14. An integrated circuit according to claim 13, where the feedback circuit is a filter with a transfer function, in the frequency domain, with a zero and a pole; wherein the zero is located at a higher frequency than the pole.

15. An integrated circuit according to claim 13 or 14 where the preamplifier has a transfer function, in the frequency domain, with a zero and a pole; wherein the pole is located in the range 0.1Hz to 50 Hz or 0.1Hz to 100Hz or 0.1 to 200Hz.

16. An integrated circuit according to any of claims 13 to 15, where the feedback circuit is a filter which, in the frequency domain, has a relatively high gain level below a transition frequency range and a relatively low gain level above the transition frequency range.

17. An integrated circuit according to any of claims 13 to 16, where the transition frequency range is located below a frequency of about 100 Hz.

18. An integrated circuit according to any of claims 13 to 17, where the transition frequency range is located below a frequency of 40 Hz.

19. An integrated circuit according to any of claims 1 to 18, comprising a DC blocking capacitor coupled to diminish a DC voltage at the input of the preamplifier, which DC voltage originates from biasing the first or second microphone member.

20. An integrated circuit according to any of claims 1 to 19, where the integrated circuit comprises an A/D converter.

21. An integrated circuit according to any of claims 1 to 20, where the integrated circuit further is configured with an analogue-to-digital converter; and wherein the voltage pump and the analogue-to-digital converter are driven by a common clock-signal.

22. An integrated circuit according to claim 20 or 21, where the analogue-to-digital converter is of the sigma delta converter type.

23. An integrated circuit according to any of claims 1 to 22, comprising a high-pass filter.

24. An integrated circuit according to any of claims 1 to 23, where the preamplifier is configured to provide a high-pass filter function.

25. A microphone comprising an integrated circuit according to any of the claims 1 to 24.

26. A microphone according to claim 25, where the microphone is a condenser microphone.

27. A microphone according to claim 25, where the microphone is a MEMS microphone.